EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Edward Van Gieson (Reg. No. 44,386) on 3/10/09.

The claims in the application have been amended as follows:

1. (currently amended) A method of managing utilization of an integrated circuit (IC) processor, comprising:

monitoring processor utilization by an adjustable software video encoder program running on a first thread, the adjustable video software encoder program having at least two different performance levels associated with a video quality of individual frames, wherein each performance level has a different associated IC processor utilization and said performance levels comprise video encoding levels corresponding to an encoder configuration; ~~and~~

selecting a performance level corresponding to a video encoding level to achieve a highest possible video quality while maintaining an idle thread utilization above a minimum threshold selected to permit another software program to load and execute; and

generating running estimates of processor utilization for previous instantiations of the adjustable software video encoder program to determine how much to adjust said performance levels.

2-6. (cancelled)

7. (currently amended) The method of claim 1, further comprising:

~~generating running estimates of processor utilization for previous instantiations of the adjustable software video encoder program to determine how much to adjust said performance levels~~ in a startup mode of operation, selecting a startup performance level of said adjustable software program to have the startup performance level with a processor utilization below a maximum IC processor utilization by a margin selected to accommodate differences in processor performance of at least two different types of IC processors.

8-12. (cancelled)

13. (original) The method of claim 1, further comprising:

in a startup mode of operation, selecting a minimum performance level as a starting performance level.

14. (currently amended) ~~The method of claim 1, further comprising:~~ A method of managing utilization of an integrated circuit (IC) processor, comprising:

monitoring processor utilization by an adjustable software video encoder program running on a first thread, the adjustable video software encoder program having at least two different performance levels associated with a video quality of individual frames, wherein each performance level has a different associated IC processor utilization and said performance levels comprise video encoding levels corresponding to an encoder configuration; ~~and~~

selecting a performance level corresponding to a video encoding level to achieve a highest possible video quality while maintaining an idle thread utilization above a minimum threshold selected to permit another software program to load and execute, and

in a startup mode of operation, selecting a startup performance level of said adjustable software program to have the ~~a~~ startup performance level with a processor utilization below a maximum IC processor utilization by a margin selected to accommodate differences in processor performance of at least two different types of IC processors.

15. (currently amended) A method of managing processor utilization in a video system, comprising:

providing a software video encoder having a plurality of encoding levels, each encoding level having a different associated processor utilization, where each encoding level corresponds to an encoder configuration affecting a video quality of individual frames;

monitoring processor utilization of said software video encoder and of idle thread utilization; ~~and~~

determining a greatest encoding level of said video encoder to maintain a minimum idle thread utilization above a minimum threshold selected to permit another software program to load and execute;

wherein said software video encoder automatically adjusts its encoding level to achieve the best video quality while maintaining idle thread utilization to permit said another software program to load and execute; and

generating running estimates of processor utilization for previous instantiations of the adjustable software video encoder program to determine how much to adjust said encoding levels;.

16. (currently amended) ~~The method of claim 15, wherein said minimum idle thread utilization is maintained until other of said software programs have a processor CPU utilization greater than a threshold utilization.~~ A method of managing processor utilization in a video system, comprising:

providing a software video encoder having a plurality of encoding levels, each encoding level having a different associated processor utilization, where each encoding level corresponds to an encoder configuration affecting a video quality of individual frames;

monitoring processor utilization of said software video encoder and of idle thread utilization; -

determining a greatest encoding level of said video encoder to maintain a minimum idle thread utilization above a minimum threshold selected to permit another software program to load and execute;

wherein said software video encoder automatically adjusts its encoding level to achieve the best video quality while maintaining idle thread utilization to permit said another software program to load and execute; and

in a startup mode of operation, selecting a startup encoding level of said adjustable software program to have the startup encoding level with a processor utilization below a maximum processor utilization by a margin selected to accommodate differences in processor performance of at least two different types of processors.

17-20. (cancelled)

21. (currently amended) A computer readable medium having computer code comprising instructions selected to:

monitor processor utilization by an adjustable software video encoder program running on a first thread, the adjustable video encoder program having at least two different performance levels, wherein each performance level where each encoding level corresponds to an encoder configuration related to video quality; ~~and~~

select a performance level to achieve a highest possible video quality of individual frames while maintaining an idle thread utilization above a minimum threshold selected to permit another software program to load and execute; and

generate running estimates of processor utilization for previous instantiations of the adjustable software video encoder program to determine how much to adjust said performance levels. -

22. (currently amended) A computer readable medium having computer code comprising instructions selected to:

monitor processor utilization of a video encoder and of idle thread utilization, the video encoder having a plurality of encoding levels, each encoding level having a different associated processor utilization, where each encoding level corresponds to an encoder configuration affecting a video quality of individual frames; -

determine a greatest encoding level of ~~a~~ the video encoder to maintain a minimum idle thread utilization to maintain an idle thread utilization above a minimum threshold selected to permit another program to load and execute;

adjusting the encoding level to achieve the best video quality of individual frames while maintaining idle thread utilization to permit said another software program to load and execute; and

generate running estimates of processor utilization for previous instantiations of the video encoder to determine how much to adjust said performance levels.

23. (previously presented). The method of claim 1, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

24. (previously presented) The method of claim 1, wherein said encoding levels correspond to decisions to select combinations of at least two of noise pre-processing, inverse telecine detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

25. (previously presented). The method of claim 1, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

26. (previously presented). The method of claim 15, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

27. (previously presented) The method of claim 15, wherein said encoding levels correspond to decisions to select combinations of at least two of noise pre-processing, inverse telecine

detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

28. (previously presented). The method of claim 15, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

29. (previously presented). The computer readable medium of claim 21, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

30. (previously presented) The computer readable medium of claim 21, wherein said encoding levels correspond to decisions to select combinations of at least two of noise pre-processing, inverse telecine detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

31. (previously presented). The computer readable medium of claim 21, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

32. (previously presented). The computer readable medium of claim 22, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

33. (previously presented) The computer readable medium of claim 22, wherein said encoding levels correspond to decisions to select combinations of noise pre-processing, inverse telecine detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full

frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

34. (previously presented). The computer readable medium of claim 22, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

35. (new) A computer readable medium having computer code comprising instructions selected to:

monitor processor utilization by an adjustable software video encoder program running on a first thread, the adjustable video encoder program having at least two different performance levels, wherein each performance level where each encoding level corresponds to an encoder configuration related to video quality;

select a performance level to achieve a highest possible video quality of individual frames while maintaining an idle thread utilization above a minimum threshold selected to permit another software program to load and execute; and

in a startup mode of operation, selecting a startup encoding level of said adjustable software program to have the startup encoding level with a processor utilization below a maximum processor utilization by a margin selected to accommodate differences in processor performance of at least two different types of processors. -

36. (new) A computer readable medium having computer code comprising instructions selected to:

determine a greatest encoding level of a video encoder to maintain a minimum idle thread utilization to maintain an idle thread utilization above a minimum threshold selected to permit another program to load and execute;

adjusting the encoding level to achieve the best video quality of individual frames while maintaining idle thread utilization to permit said another software program to load and execute; and

in a startup mode of operation, selecting a startup encoding level of said video encoder to have the startup encoding level with a processor utilization below a maximum processor

utilization by a margin selected to accommodate differences in processor performance of at least two different types of processors.

37. (new). The method of claim 14, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

38. (new) The method of claim 14, wherein said encoding levels correspond to decisions to select combinations of at least two of noise pre-processing, inverse telecine detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

39. (new) The method of claim 14, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

40. (new). The method of claim 16, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

40. (new) The method of claim 16, wherein said encoding levels correspond to decisions to select combinations of at least two of noise pre-processing, inverse telecine detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

41. (new) The method of claim 16, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

42. (new). The computer readable medium of claim 35, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

43. (new) The computer readable medium of claim 35, wherein said encoding levels correspond to decisions to select combinations of at least two of noise pre-processing, inverse telecine detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

44. (new) The computer readable medium of claim 35, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

45. (new). The computer readable medium of claim 36, wherein said encoding levels affect at least one of a noise reduction process, a prediction algorithm, a level of accuracy, a level of detail, a level of sophistication used in data analysis, a number of iterations used, error handling processes, and a size of a motions search.

46. (new) The computer readable medium of claim 36, wherein said encoding levels correspond to decisions to select combinations of at least two of noise pre-processing, inverse telecine detection, high quality motion search, bidirectional motion search, half-pel motion vectors, full frame motion estimation, field frame discrete cosine transformation, and full precision mean absolute difference calculations.

47. (new) The computer readable medium of claim 36, wherein said encoding levels affect at least one of a noise filtering process and image resolution.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENNETH TANG whose telephone number is (571)272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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